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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/559,403	04/26/2000	Yong Beom Kim	0214-0166P-SP	1204

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EXAMINER
NGUYEN, HOAN C

ART UNIT	PAPER NUMBER
2871	

DATE MAILED: 09/15/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/559,403	KIM, YONG BEOM	
	Examiner	Art Unit	
	HOAN C. NGUYEN	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10 and 23-27* is/are pending in the application.

4a) Of the above claim(s) *11-21* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10 and 23-27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114 was filed in this application after appeal to the Board of Patent Appeals and Interferences, but prior to a decision on the appeal. Since this application is eligible for continued examination under 37 CFR 1.114 and the fee set forth in 37 CFR 1.17(e) has been timely paid, the appeal has been withdrawn pursuant to 37 CFR 1.114 and prosecution in this application has been reopened pursuant to 37 CFR 1.114. Applicant's submission filed on 7/14/2003 has been entered.

Applicant cancelled claims 11-22, thus claims 1-10 and 23-27 are still pending.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 1-6 and 23-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kubo et al. (US6295109B1) in view of Moriyama et al. (US4017156), and in further view of Mitsui et al. (US5408345A).

In regard to claims 1 and 23, Kubo et al. teach (Figs. 2-3) a transmission - reflection type liquid crystal display device comprising:

- a first transparent substrate 1;
- a second transparent substrate-2,
- a liquid crystal layer 5 between the first transparent substrate and the second transparent substrate;
- a linear polarizer 9 on the second transparent substrate;
- a circular polarizer ($\lambda/4$ wave plate 7) on an outer side of the first transparent substrate 1;
- a reflecting film (reflective electrode region 3R) on an inner side of the first transparent substrate adjacent to the liquid crystal layer, the reflecting film defining a light-transmitting region (transmissive electrode region 8T).
- a $\lambda/4$ phase shift plate($\lambda/4$ wave plate 10) between the linear polarizer 9 and the liquid crystal layer according to claim 2.
- a transparent common electrode (transssiive electrode 4) between.the linear polarizer 6 and the liquid crystal layer according to claim 6.

In regard to claim 3, Kubo et al. teach (Fig. 2) a transmission-reflection type liquid crystal display device, wherein when a voltage is not impressed on the liquid crystal layer, the liquid crystal layer imparts or grants a phase shift of $\lambda/4$ to light transmitted through the liquid crystal layer since the retardation of liquid crystal 5 is zero when no voltage is applied (col. 10, lines 11-13).

In regard to claim 5, Kubo et al. teach (Figs. 2-3) a transmission-reflection type liquid crystal display device further comprising a color filter on the reflective and transmissive electrode regions (col. 25 lines 55-58), thereby between the linear polarizer and the liquid crystal layer.

However, Kobo et al. fails to disclose

- a transmission-reflection type liquid crystal display device, wherein the cholesteric liquid crystal polarizer includes a right handed helical cholesteric liquid crystal having a range of pitch values p of λ/n for electro-optical display images, where n is an average index of refraction of cholesteric liquid crystal and λ is wavelength. Since the display device is conventionally worked or performed with the visible light, which has wavelength of λ=380nm-800nm.
- The light transmitting region disposed between an inner edge of a gate line and a side of outer edge periphery of the reflection film in each pixel.

Moriyama et al. teach (col. 3 lines 8-14) a transmission-reflection type liquid crystal display device, wherein the circular polarizer (1/4 spectrum plate 3) includes a right handed helical cholesteric liquid crystal having a range of pitch values p of λ/n for electro-optical display images, where n is an average index of refraction of cholesteric

liquid crystal and λ is wavelength. Since the display device is conventionally worked or performed with the visible light, which has wavelength of λ=380nm-800nm.

Mitsui et al. disclose (Fig.1, col. 3 lines 4-12)) the light transmitting region (a gap 9a) disposed between an inner edge of a gate line and a side of outer edge periphery of the reflection film (reflection electrode 9) in each pixel for preventing conduction between the reflection electrode and bus wirings (gate or data lines).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a transmission-reflection type liquid crystal display device as Kubo et al. disclosed with (a) the circular polarizer includes a right handed helical cholesteric liquid crystal having a range of pitch values p of λ/n for electro-optical display images, where n is an average index of refraction of cholesteric liquid crystal and λ=380-800nm; (b) the light transmitting region (a gap 9a) disposed between an inner edge of a gate line and a side of outer edge periphery of the reflection film in each pixel for preventing conduction between the reflection electrode and bus wirings (gate or data lines).

2. Claims 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kubo et al. (US6295109B1) in view of Mitsui et al. (US5408345A).

In regard to claim 7, Kubo et al. teach (Fig. 8A) a transmission-reflection type liquid crystal display device comprising

- a plurality of gate lines 21 and data lines 22 defining a plurality of pixels;

- a transistor 23 in each pixel,
- a gate of which is connected to a gate line and a second terminal of which is connected to a data line; a reflecting film 30 formed in each pixel and connected to a third terminal of the transistor in each pixel,

wherein

- a light-transmitting region (31 and regions above gate and data lines) through which light may pass is bordered by a gate line and the reflecting film in each pixel.
- light-transmitting region 21 exists between a data line adjacent to the data line connected to the second terminal of the transistor and the reflecting film in each pixel according to claim 8.
- the reflecting film overlaps (not entirely) the data line connected to the second terminal of the transistor in each pixel according to claim 9.
- the reflecting film overlaps (not entirely) a gate line adjacent to the gate line connected to the gate of the transistor in each pixel according to claim 10.

However, Kobo et al. fails to disclose the light transmitting region disposed between an inner edge of a gate line and a side of outer edge periphery of the reflection film in each pixel. Thus, the outer edge of the reflecting film which does not overlap an inner edge of the adjacent gate line in each pixel.

Mitsui et al. disclose (Fig.1, col. 3 lines 4-12)) the light transmitting region (a gap 9a) disposed between an inner edge of a gate line and a side of outer edge periphery of the reflection film (reflection electrode 9) in each pixel for preventing conduction between the reflection electrode and bus wirings (gate or data lines).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a transmission-reflection type liquid crystal display device as Kubo et al. disclosed with the light transmitting region (a gap 9a) disposed between an inner edge of a gate line and a side of outer edge periphery of the reflection film in each pixel for preventing conduction between the reflection electrode and bus wirings (gate or data lines).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HOAN C. NGUYEN whose telephone number is (703) 306-0472. The examiner can normally be reached on MONDAY-THURSDAY:8:00AM-4:30PM.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0530.

HOAN C. NGUYEN
Examiner
Art Unit 2871

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September 2, 2003

ROBERT H. KIM
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800